

From the INTERNATIONAL BUREAU

PCT

**NOTIFICATION OF ELECTION**  
**(PCT Rule 61.2)**

Date of mailing (day/month/year) 12 February 2001 (12.02.01)	To:  Commissioner US Department of Commerce United States Patent and Trademark Office, PCT 2011 South Clark Place Room CP2/5C24 Arlington, VA 22202 ETATS-UNIS D'AMERIQUE in its capacity as elected Office
International application No. PCT/EP00/05467	Applicant's or agent's file reference 3-228 PLUG2
International filing date (day/month/year) 14 June 2000 (14.06.00)	Priority date (day/month/year) 15 June 1999 (15.06.99)
<b>Applicant</b> RENNA, Egidio	

## 1. The designated Office is hereby notified of its election made:

in the demand filed with the International Preliminary Examining Authority on:

13 January 2001 (13.01.01)

in a notice effecting later election filed with the International Bureau on:

\_\_\_\_\_

2. The election  was

was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland  Facsimile No.: (41-22) 740.14.35	Authorized officer  S. Mafla  Telephone No.: (41-22) 338.83.38
---	--

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 A23G3/00 B65D51/28

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 A23G B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2 322 283 A (ZETA ESPACIAL) 26 August 1998 (1998-08-26) page 5, line 3 - line 6 -----	25-28
A	US 5 370 884 A (COLEMAN THOMAS J) 6 December 1994 (1994-12-06) the whole document -----	1-28
P, A	US 5 993 870 A (MULLANEY SEAN ET AL) 30 November 1999 (1999-11-30) the whole document -----	1-28

 Further documents are listed in the continuation of box C. Patent family members are listed in annex.

## \* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

Date of mailing of the international search report

28 September 2000

13/10/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Weber, G

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
GB 2322283	A 26-08-1998	DE AU BE BR CN DE DK ES FI FR HU IE IT NL NO PT SG SI ZA CA HR SE	29703131 U 4524797 A 1011642 A 7702316 U 2316277 U 19743607 A 108397 A 1039279 U 3468 U 2759987 A 9800386 A 980104 A MI970743 U 1008335 C 980673 A 9445 U 64473 A 9800033 A 9801381 A 2220324 A 980312 A 9704815 A	07-05-1997 27-08-1998 09-11-1999 01-06-1999 28-04-1999 27-08-1998 22-08-1998 01-12-1998 23-07-1998 28-08-1998 01-02-1999 26-08-1998 16-04-1999 24-08-1998 24-08-1998 31-08-1998 27-04-1999 31-10-1998 04-09-1998 12-12-1998 30-06-1999 13-12-1998
US 5370884	A 06-12-1994	NONE		
US 5993870	A 30-11-1999	NONE		

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>3-228 PLUG2</b>	<b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. <b>PCT/EP 00/05467</b>	International filing date (day/month/year) <b>14/06/2000</b>	(Earliest) Priority Date (day/month/year) <b>15/06/1999</b>
Applicant <b>RENNA, Egidio</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 2 sheets.

It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the report**

- a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

- the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).
- b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing:
- contained in the international application in written form.
  - filed together with the international application in computer readable form.
  - furnished subsequently to this Authority in written form.
  - furnished subsequently to this Authority in computer readable form.
  - the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
  - the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2.  Certain claims were found unsearchable (See Box I).

3.  Unity of Invention is lacking (see Box II).

4. With regard to the title,

- the text is approved as submitted by the applicant.
- the text has been established by this Authority to read as follows:

5. With regard to the abstract,

- the text is approved as submitted by the applicant.
- the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawing to be published with the abstract is Figure No.

- as suggested by the applicant.
- because the applicant failed to suggest a figure.
- because this figure better characterizes the invention.

4 Non of the figures.

REC'D 27 AUG 2001  
WIPO PCT

M

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference  3-228 PLUG2	<b>FOR FURTHER ACTION</b>	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No.  PCT/EP00/05467	International filing date (day/month/year)  14/06/2000	Priority date (day/month/year)  15/06/1999
International Patent Classification (IPC) or national classification and IPC  A23G3/00		
Applicant  RENNA, Egidio		
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 4 sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of sheets.</p>		
<p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <li>I    <input checked="" type="checkbox"/> Basis of the report</li> <li>II    <input type="checkbox"/> Priority</li> <li>III    <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</li> <li>IV    <input type="checkbox"/> Lack of unity of invention</li> <li>V    <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li> <li>VI    <input type="checkbox"/> Certain documents cited</li> <li>VII    <input checked="" type="checkbox"/> Certain defects in the international application</li> <li>VIII    <input type="checkbox"/> Certain observations on the international application</li> </ul>		

Date of submission of the demand  13/01/2001	Date of completion of this report  23.08.2001
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer  Weber, G  Telephone No. +49 89 2399 8656



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/EP00/05467

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, pages:**

1-17                   as originally filed

**Claims, No.:**

1-28                   as originally filed

**Drawings, sheets:**

1/17-17/17           as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- the language of publication of the international application (under Rule 48.3(b)).
- the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- contained in the international application in written form.
- filed together with the international application in computer readable form.
- furnished subsequently to this Authority in written form.
- furnished subsequently to this Authority in computer readable form.
- The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- the description,       pages:
- the claims,           Nos.:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/EP00/05467

the drawings,      sheets:

5.  This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c));  
*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes:	Claims 1-24
	No:	Claims 25-28
Inventive step (IS)	Yes:	Claims 1-24
	No:	Claims 25-28
Industrial applicability (IA)	Yes:	Claims 1-28
	No:	Claims

2. Citations and explanations  
**see separate sheet**

**VII. Certain defects in the international application**

The following defects in the form or contents of the international application have been noted:  
**see separate sheet**

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/EP00/05467

ad V:

1). The subject-matter of claims 1 to 24 can be regarded as meeting the requirements of Articles 33(2) and 33(3) PCT. The plug for sucking a beverage having the defined housing means, body, top portions and removable outer covering means has neither been disclosed nor rendered obvious by the available prior art. That the said arrangement allows to efficiently and progressively transfer the taste and nutritional components of a praline to a beverage licking said praline in a manner controlled and favoured by the rubbing of the user's tongue thereon supports the presence of an inventive step.

2). The subject-matter of claim 25 is directed to a conventional praline such as disclosed in GB-A-2322283 (D1: see e.g. page 5, lines 3 to 6 and the abstract). Thus, claim 25 lacks novelty (Article 33(2) PCT).

3). In any claims amended to overcome the novelty objection it will be necessary that said claims satisfy the requirements of inventive step (Articles 33(3) PCT).

With regard to the assessment of inventive step document D1 is also relevant.

4). A positive International Preliminary Examination Report for the subject-matter of the dependent claims 26 to 28 can only be established when they refer to an independent claim meeting the requirements of the PCT.

ad VII:

. To meet the requirements of Rule 5.1 a) ii) PCT, the document D1 should be identified in the description and the relevant background art disclosed therein should be briefly discussed.

(19) World Intellectual Property Organization  
International Bureau(43) International Publication Date  
21 December 2000 (21.12.2000)

PCT

(10) International Publication Number  
**WO 00/76327 A1**(51) International Patent Classification<sup>7</sup>: A23G 3/00,  
B65D 51/28(74) Agent: ZANELLA, Ireneo; Zanella & Associati S.r.l.,  
P.O. Box 98, I-22074 Lomazzo (IT).

(21) International Application Number: PCT/EP00/05467

(81) Designated States (*national*): AU, BG, BR, CA, CN, CZ,  
HU, JP, KR, MA, MX, NO, NZ, PL, RU, SG, SI, SK, TR,  
US, ZA.

(22) International Filing Date: 14 June 2000 (14.06.2000)

(84) Designated States (*regional*): European patent (AT, BE,  
CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC,  
NL, PT, SE).

(25) Filing Language: English

**Published:**

- *With international search report.*
- *Before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments.*

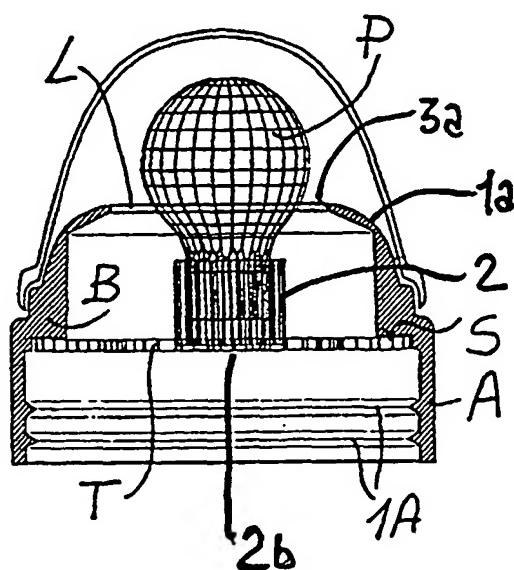
(26) Publication Language: English

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(71) Applicant and

(72) Inventor: RENNA, Egidio [IT/IT]; Via Cimarosa, 9A,  
I-20144 Milano (IT).

(54) Title: PLUG FOR SUCKING A BEVERAGE



(57) Abstract: A plug for sucking a beverage from a bottle or the like comprises housing and supporting means for housing and supporting a dissolvable food praline, the beverage being delivered through the plug through a window formed between the outer contour of the praline and the praline housing chamber and/or through at least a praline throughgoing hole. With a "teat" configuration of the plug top portion a sucking, in any desired dissolving degrees, of the praline, depending on the rubbing of a user's tongue on the praline and on the beverage suction, being thereby facilitated.

## "PLUG FOR SUCKING A BEVERAGE"

### Background of the Invention

The invention relates to a plug for sucking a beverage according to the preamble of Claim 1.

In the following disclosure the term "praline" will mean any types and shapes of food products, such as confectionery products, sweets, chocolates and so on, which are dissolved in the mouth by rubbing against the tongue, or by contact with the saliva, heat and so on.

The term "beverage" will mean any conventional beverages such as tea, milk, water, drinks, as well fruit juices and the like, and more viscous food products, such as cocoa based beverages, yoghurt and so on. The term "beverage" will moreover encompass liquids in which medicines, such as for children, are dissolved.

The document FR-A-1,288,957 discloses a vessel to be fixed to drink bottles. This vessel comprises two closable pieces, adapted to hold therebetween any desired food products, for example ice cream, said vessel being provided with an inlet nozzle which can be coupled to a bottle, and an outlet nozzle therefrom the beverage is delivered, upon mixing it with the ice cream, or the like, held inside the vessel. Thus, the dissolving of the ice cream into the beverage occurs outside of the user mouth and in a chamber which cannot be accessed by the user tongue.

The document US-A3,201,015 also discloses a vessel provided for mixing a liquid, held in a bottle, and a dissolvable food product held in said

vessel, said vessel also comprising two portions. In this vessel too a recess is provided at one end thereof for coupling to a bottle, whereas the other end comprises a suction nozzle for sucking the beverage upon having mixed it with the dissolvable element held in the vessel.

The document WO-99/64323 teaches to improve the perception of a drink taste by aromatizing the plug of the bottle holding the drink beverage. Thus, the plug is so perfumed to affect the sense of smell as the beverage is drunk.

The re-issued US Patent (USOORE 35577E) discloses a cylinder-shaped supply device including at a bottom thereof a beverage which can be delivered by pressing on a piston. The delivered liquid exits through ducts traversing an outer sweet. In sucking the sweet, the lips do not encounter any bearing points, and the delivered liquid adjusting is manually controlled and cannot be affected by a rubbing movement of the tongue.

The document US-A-5,370,884 discloses a support element for a hard sweet coupled to a powder or granular confectionery product vessel for providing children with a different taste.

The document US-A-5,993,870 discloses a device for holding and coating a confectionery product having a handle. The addition of said substances being performed manually and outside the user mouth.

#### Summary of the Invention

Thus, the aim of the present invention is to provide a plug for sucking a beverage allowing to efficiently progressively transfer the taste and nutritional components of a praline to a beverage licking said praline in

a manner controlled and favored by the rubbing of the user's tongue thereon, or an immediate proximity of the user's lips and nose.

In a plug according to the preamble of claim 1, said aim is achieved by the features of the characterizing portion of claim 1.

Further embodiments and configurations of the plug according to the invention are defined in the dependent claims.

The plug according to the invention provides a lot of important advantages.

At first, the immediate proximity of the praline to the taste and smell members, with the beverage being directly sucked on the praline, affects in a direct and intensive manner said members, thereby improving the pleasure of tasting the mixture of the beverage and dissolved praline components.

A further advantage is that the dissolving rate of the praline components can be directly controlled by the user, directly controlling said praline by sucking, tongue rubbing and saliva dissolving operations as well as by the heat of his/her mouth cavity.

A further advantage is that the praline operates per se as a "conveyor" of the beverage to be drunk, thereby facilitating a large surface firm contact of the praline and the beverage licking it. This large contact surface, in combination with the tongue rubbing on the praline (which rubbing can be adjusted by the user directly affecting the praline) allows the user to adjust at will the dissolved component amount which can be transferred from the praline to the beverage. Thus, the user can directly adjust the praline dissolvable components released into the beverage, which

operation is performed in the user's mouth and, accordingly, directly affects the sense of smell, thereby further increasing the related pleasure.

Yet another advantage is that the praline, operating as a beverage transfer member, can be indifferently fixedly or rotatably supported in the plug according to the invention, thereby providing further advantageous embodiments thereof.

The plugs according to the present invention, allows the user to obtain a large and natural ergonomics bearing of his/her lips on the inventive plug, thereby enhancing his/her pleasure, (for example as the user is a child), since in sucking the praline or drinking the beverage, he/she will pleasantly remember the maternal breast-feeding. In particular, if the plugs are fitted for a removable application to bottles or vials, this would likewise facilitate an easy taking of a medicines by children.

#### Brief Description of the Drawings

Further characteristics, details and advantages of the plug according to the present invention will become more apparent hereinafter from the following disclosure of several embodiments of the plug according to the invention, which are illustrated, by way of an indicative example, in the accompanying drawings showing several perspective, cross-sectional, broken-away and exploded views or figures, which are not herein disclosed in any further details, since they would immediately intelligible from the drawings illustrating the following examples.

#### Example 1 (Figures 1-4)

The plug 1 according to the present invention is herein made of any suitable materials, preferably a food product synthetic material, and substantially comprises a bottom fixing portion A, a middle portion B and a top contoured portion C. Inside the bottom portion A means for fixing the plug to a vessel, such as a bottle or vial are provided, said means comprising a continuous thread 1A, or a sector-thread such as a bayonet attachment or the like. Inside the middle portion B a seat or recess S, housing therein, for example by a snug engagement, supporting means T for supporting a praline P, for example a hard sweet is formed. The praline P housing means comprise a cylinder 2, in the inside 2a of which it is possible to snugly engage a portion 4a of the praline P. The reference 2b indicates the closed bottom of the cylinder 2. The supporting means T and housing means 2 advantageously consists of a single-piece insert. The praline P has a generically spherical configuration 4 having a diameter, for example, of about 18 mm.

The top portion C is rounded at 1a as a "teat", and comprises an opening 3a having such a diameter as to form, with said praline P, a circumferential port L, for example of 2-5 mm, thereby providing a desired delivery of the beverage, depending on the viscosity or density thereof, said port having a smaller cross-section for aqueous beverages such as tea and drinks, and a larger cross-section for more dense or less viscous beverages such as fruit juices, cocoa based beverages, yoghurt and the like.

In the shown example, the support means T comprise a plurality of radially extending arms 3 separated by openings 3a and joined by an outer crown 3b.

The reference D shows a covering, for example of a clear material, in the form of a cap, which covering can be resiliently fixed by removably snugly engaging it on the middle portion B of the plug 1, as shown in the figures.

As a user abuts his/her lips about the praline P and the top portion C of the plug 1, and tilts the bottle, the beverage passes through the openings 3a and circumferential port 1 to the tongue, while entraining therewith all the taste and nutritional components of the praline P. By rubbing the tongue with a desired force and time against the praline P, the dissolving rate of said praline into the beverage can be properly controlled. Actually, the ergonomics configuration of the top part C of the plug allows the user's lips to safely close on the plug, like a maternal breast suction. Simultaneously, the user can bear his/her lips on the plug 1 and praline P.

According to the invention, the bottom 2b of the housing means 2 can be provided with holes and the praline can be in turn provided with one or more throughgoing holes for allowing a liquid flow both through the bottom 2b and the praline. Thus, the beverage flow will be further facilitated, while eroding said praline with a greater speed.

#### Example 2 (Figures 5, 6 and 7)

In this first modified embodiment, the supporting and housing means define two diametrically opposite and coaxially extending arms 6. The praline 7 is correspondingly provided with two diametrically opposite holes 7a for receiving, at the respective end portions thereof, the arms 6. To that end, said arms 6 are sufficiently resilient, and the size whereof are so

designed, to properly house said praline 7 while advantageously allowing said praline to be rotated thereon. The plug 5 is in turn provided with a top rounded portion 5a including an opening 5b defining, with said praline 7, the above mentioned beverage delivering perimetrical port 1. In this embodiment, a covering cap can be moreover provided, not specifically shown, as in Example 1. The reference number 6a shows the contoured portions formed as a single piece on the arms to facilitate a proper locating of the praline for use. Actually the sweet can be turned both by flowing beverage and by the user's tongue rubbing on the praline. The reference number 7b shows a throughgoing hole to allow the beverage to also flow through the praline 7. The rotation of the praline allows a uniform consumption or wearing thereof.

### Example 3 (Figures 8 and 9)

The praline 9 is arranged on a rod-like support element 10 ending with end enlarged portions 10a, for example of ball configuration, which can be engaged in corresponding seats 8b formed on the ergonomical rounded top portion 8a of the plug 8. The configuration of the enlarged portions 10a and seats 8b is so selected to assure a slightly resilient engaging of said enlarged portions or preventing the praline 9 from being accidentally disengaged from the plug 8. The rod-like element can also be formed as a detachable element, for example of telescopic configuration, to easily replace or change at will the praline 9.

The mixing of the components of the praline 9 and beverage is herein performed as disclosed for the embodiment shown in Figures 5-7.

#### Example 4 (Figures 10, 12)

In this example, the housing means comprise a cylindric flat seat 2, of small depth, provided with a central opening 14 for allowing the beverage to flow therethrough. The supporting means comprise a plurality of pins or pegs 12, of which, in the disclosed embodiment, three pins or pegs are shown. For the remaining portion, the plug 16 has a configuration analogous to that of the previous examples. The praline 13 is provided with a throughgoing vertical hole 13a. With the praline 13 in its assembled condition, the throughgoing hole 13a and hole 14 will be coaxial to one another. With a soft type of pralines 13, they must be fixed by pressing them on the pins 12. With hard pralines, on the other hand, they could include small holes for facilitating their application.

The plugs shown in Figures 10 and 12 are also adapted to house therein both a ring-like praline, for example of a jelly/rubber type, Figure 10A. Further it could optionally be possible to provide a second internal praline, not shown. In this case, the contoured top portion of the plug housing the ring-like praline would have a smaller size, e.g. an outer diameter of about 18-20 mm.

#### Example 5 (Figures 11, 13)

This fifth modified embodiment is directly derived from the example of Figures 10 and 12. In the housing seat 2 a small cylinder 15, having a throughgoing hole 15a, and made as a single-piece with the plug 16 is provided. The praline 13 being engaged in said hole 15a of said cylinder

15. For firmly coupling the praline pin or peg elements 12 moreover are provided. In this embodiment, a less contact between the beverage and praline occurs, thereby the praline will be eroded in a less degree.

Figures 14 and 14a respectively show a front elevation view and an exploded view of a plug 1 having a hygienic covering cap 16 with a coupling contour 17 slightly different from that shown in the Example 1 figures.

Figure 15 shows a plug with a praline and covering cap in a package consisting of a plastics pouch. Thus, the user can affix by himself/herself the plug on a bottle or the like, holding any desired beverage, and apply on the bottle a praline having any freely selectable tastes.

Figure 16 is a perspective view showing the plug according to the invention mounted on a bottle-like vessel, a can vessel 19 or the like.

#### Example 6 (Figures 17, 18)

In this sixth modified embodiment, the plug 21 is formed with a housing hole 22 for receiving a small rod 20 supporting at the top thereof a praline 13. The reference number 20b shows indicates the bottom end of the axially perforated rod 20, whereas 13a shows the hole of the praline 13. A firm support of the praline 13 is herein assured by forced-coupling means, for example notches or ribs, not shown. A firm tight engaging of the rod 20 in the hole 22 being likewise obtained by engraving the rod 20 outside, or by any other suitable coupling means.

Figures 21 and 22 respectively show a bottle having a plug and praline according to Figures 17 and 18.

In this embodiment, it would be possible to loosely sell different-taste pralines and related rods, for example in a blister-type of package, thereby allowing the user to select the desired taste praline.

According to the invention, the rod 20 may have a shorter length, as shown, for example, in Figures 19 and 20.

#### Example 7 (Figures 23 to 27)

The shown modified embodiment also allows to use pralines P or 25 which are fitted onto a supporting stem or stick 28, like the known lollipops. In this case, the plug 1 is provided with an inner diaphragm 27 including a plurality of windows 32 as well as preferably – for hygienic and positioning purposes - and a hollow cylindrical lug 26, of tube shape, downward projecting for supporting housing and supporting the praline stick 28.

Preferably, said hollow cylinder lug 26 includes a seat or recess 29, allowing, upon exhausting the beverage, to further leak the remaining praline, upon removing it from the vessel. To that end, the user must press said hollow cylinder to break away the plug 1 therefrom.

To achieve this, said cylindrical lug is perforated at the bottom thereof, as shown by 30, and has a length 31 less than that of the praline 25 supporting stick 28.

The reference number 33 shows again the rounded anatomic configuration for bearing the user's lips thereon, whereas 3a shows the opening defining, with the praline 25, the circumferential delivery port L.

In operation, the user will mount said praline or "lollipop" with its stick on the plug through the hole 27 of the slitted diaphragm 32, and then will drink the beverage flowing through the windows 32a of the diaphragm 32. Upon exhausting the beverage, the user can consume at will the praline, or mount it on another bottle.

Figure 30 shows an embodiment modified from that of Example 7, Figure 27, specifically designed for a lollipop, in which the cane lug 26 is provided for removably connection to the bottom diaphragm of the plug, for example by screw means. In operation, the user will engage the lollipop stick in the cane lug and then will break away said stick to the desired length to properly locate the praline on the plug. Upon exhausting the beverage, will detach from the plug the hygienic protective and stick locating lug and disengage the stick from the lug to fully consume the praline in a conventional manner.

In a further simplified embodiment, not shown, the plug can be merely provided with a hole for the lollipop stick and circumferential rod-like lugs for proper a locating the stick.

#### Example 8 (Figures 31, 32, 33)

The plug 32 has a bottom portion A, a middle portion B and a top portion C which is anatomically rounded like a "teat", for an easy and proper application of the lips, as the plug 1 of the first embodiment. The praline P supporting means comprise a peg 34 formed as a single piece on the supporting arms 33, in turn formed as a single piece with the body of the plug 32 or with a disc-like diaphragm, as in Example 1. The reference

number 34a shows notches, ribs or the like, provided for firmly and tightly coupling the praline P on the peg 34, which coupling, in particular, can be performed by a simple pressure application, e.g. for a chocolate praline, which can be pre-heated, or a hard praline, of a sweet type, said pralines including therein a coupling blind hole, not shown.

As is shown in Figure 33, between the coupling means 33, for coupling the praline to a bottle or the like, and said arms 33, a set spacing is provided, for optionally engaging therein a removable separating hygienic diaphragm, for example of an aluminium, polyethylene or the like sheet, not shown.

In a further modified embodiment of the Example 8 plugs the top portion of the peg supporting element is patterned to a puppet, flower or the like configuration (Figure 34A), thereby, upon exhausting the praline, the user can bear his/her tongue on a more rounded peg. Said plugs, in particular, could also be collected. Said peg is preferably provided removable, for example by means of a screw engagement, in order to allow to eat separately the praline when the beverage is drunk up. The same result may be achieved by providing the upper plug part C removable from the plugbody. Furthermore, by providing a transparent praline on said profiled pegs it is possible to achieve a pleasant chromatic effect and see the configuration of the internal peg.

#### Example 9 (Figures 35 to 39)

In this ninth embodiment, the praline supporting means comprise a peg 36 projecting from the top portion C of the plug 35. The peg 36 is

hollow, and has end openings shown by 36a and 36b. The praline P housing means comprise a small-depth hollow recess 35b, formed on a top enlarged portion 35a. The peg 36 is preferably tilted, thereby facilitating the gripping of the bottles by the user for drinking the beverage. Also in this case, the peg 36 can comprise firm-coupling means, such as notches, ribs or the like, and the praline P can include a throughgoing hole, as shown.

Figures 38 and 39 show a vertically extending peg 36, and the praline P housing means can comprise a disc-like element 39b.

In the embodiments including supporting means formed as projecting hollow pegs, the praline P could have, as it would be obvious, a broader range of possible configurations. For example, as shown in Figures 38 and 39, the praline P can have a bell shape, thereby providing optimum ergonomics characteristics for the user's lip engagement.

In order to avoid an obstruction of the hollow peg by the praline fitted thereon, according to the present invention inside the cover D is can be provided an integrally molded central pin projecting along the cover center line.

#### Example 10 (Figures 40 to 44)

This tenth embodiment is similar to the fifth embodiment, since the housing means comprise a top circular flat seat 39a, of small depth, having a central hole 42. The praline P supporting means are shown by 40 and 42 and comprise projecting strip portions having different length.

The plug 39 comprises, also in this embodiment, the three inventive portions, i.e. a bottom portion A, a middle portion B and an ergonomical

contoured top portion C. In Figures 45 and 46, the plug is provided with an easily removable covering cap 11.

The plug, praline and protective cap assembly could be individually sold, for example in a plastics material pouch or blister, as shown in Figure 46A. Figures 47 and 47A shows a plug respectively applied to a Tetrapack® type of package, or "box", and on a bottle.

In the plug according to this tenth embodiment, a hygienic separating diaphragm 45, e.g. an aluminium membrane, a synthetic material film, e.g. of a heat sealable material, to be pressure or snap applied, as shown in Figures 48 - 50 could also be provided.

#### Further embodiments (Figures 51 to 67)

If the user desires to drink the beverage not continuously, but by portions, thus to prevent, because of a slant or reverse arrangement of the bottle, any undesired leaks of liquid and dissolving of the praline due to a continuous contact of the praline with liquid, telescopic types of plugs could be used. In particular, such a plug would substantially comprise two half-plugs to be mutually telescopically coupled (Figures 51-53) of which the top half-plug would house the praline and would be provided, at the bottom thereof, in a windowed diaphragm, with a solid region closing an opening through a diaphragm of the bottom half-plug, as the two half-plugs are abutted against one another, said opening allowing the beverage to flow therethrough upon separating the half-plugs.

A first example of such "telescopic" plug is shown in Figures 54-59. At the bottom of the top half-plug 46, which, for example, is made as the

plug shown in Figure 2, is provided, as a single-piece, a lug 46a having the shape of a cylindric sleeve with a slightly projecting and beveled bottom edge 46b, thereby it can be easily inserted and removed into/from the bottom half-plug 47, which will include include a cylindrical sleeve 47a having a upturned edge 47b near its free end, and, at the bottom, a portion A will in its inside the coupling means for coupling the plug to a bottle, box or the like. In this example, on a bottom closed diaphragm 58, Figure 59 is arranged a cylindrical lug 48A having a throughgoing hole, the opening of which bears against a corresponding wall portion 52 of the top half-plug 46, as shown in Figure 59, the half-plugs 46 and 47 being shown spaced from one another, i.e. in their beverage delivering condition. In operation, a very good opening/closing of the plug has been obtained with an opening/closing stroke of the order of about 3/8 mm, preferably about 6 mm. By lowering the top half-plug 46 against the bottom half-plug 47, the solid wall portion 52 of the top half-plug 46 will abut against the opening of the cylindrical lug 48A of the bottom half-plug 47, thereby shutting off the beverage delivery even with the bottle arranged in a slanted or reversed position. The maximum withdrawn position of the top half-plug 46 being defined by the engagement of the contoured ribs 46b and 47b of the half-plugs 46 and 47. The assembling of the cylindrical sleeves 46a and 47a can be easily carried out owing to the resilient properties of the plastic materials of the half-plugs 46 and 47.

In the example shown in Figures 62-66, through the closing wall of the bottom half-plug 47 a hole 53, which can be closed by a corresponding cylindrical or frustum lug 54 arranged on the top half-plug 46 is formed.

Further constructional details and geometric patterns of the opening/closing portions of said half-plugs can be easily deduced from the drawings.

From the above constructional and operating disclosure of the plugs according to the present invention, it should be clearly apparent that they efficiently achieve the aim of the invention, and further allow to obtain the mentioned advantages.

In practicing the invention, the features of the embodiments of the invention herein disclosed can be combined at will to provide yet other inventive plugs.

With respect to the composition of the pralines, which can be loosely selected as a confectionery product, sweet, chocolate and the like, it would be further possible, and this would come within the invention scope, to provide pralines enhanced by vitamin and energetic components as desired, as well as pralines holding therein liquids of beneficial or stimulating properties (for example ginseng extracts) which will be selected as the praline is progressively dissolved.

As shown in the drawings, in all the modified embodiments of the invention, the user will apply his/her lips directly on the praline and, in a less or larger amount on the plug, depending on the arrangement of the praline in the plug, which, together with the delivery of the beverage through a circumferential port adjoining the praline and/or through one or more throughgoing holes formed in said praline, and the ergonomics top pattern of the "teat" like plug, would provide a novel drinking "technique" with a strong symbolic-freudian antistress and ludic component,

remembering a matern breast feeding. This would pleasantly attract children, from a side, and, in cooperation with the geometric pattern of the praline/plug top portion, would provide an easy and desirable dissolving into the beverage of the praline components, which can be easily controlled by the child licking/sucking the praline as he/she sucks the drink.

Advantageously, the praline can also include liquids, as well as components, such as iron, zinc and the like supplying compounds and substances, not per-se included in the beverage, thereby the plug-praline assemblies according to the invention will allow a novel, easy and pleasant sucking of these components too.

Moreover, since the plugs can be removably coupled to bottles, boxes and the like, it is also possible to easily add to the drinks additional components such as medicines, for an easy administration to children.

Further modified embodiments of the inventive plugs, made by combining at will the different characteristics of the praline housing and supporting means disclosed in the preceding examples, would also come within the scope of the invention.

While the fixing means for coupling the plug to bottles, boxes and the like have been merely shown as thread and bayonet connections, it would come within the invention scope to provide any other technical equivalents thereof, both of a removable and a fixed type. For example, said fixing means can also be provided for inserting the plug inside a bottle mouth or neck. In particular, the food compatible synthetic material for making the plugs can preferably be a clear plastic material.

## CLAIMS

1. A plug for sucking a beverage, comprising:

- coupling means for coupling said plug to a vessel holding a beverage to be drunk,
- housing means for housing therein a dissolvable food product, or a praline,
- supporting and housing means for supporting and housing said praline,
- an optional praline already housed in said plug,

characterized in that

- the body of the plug substantially comprises a base or bottom portion (A), a middle portion (B) and a top portion (C) said bottom portion (A) including said coupling means (1A) for coupling said plug to the vessel holding the beverage to be drunk,
- the praline housing means comprise a chamber or seat preferably arranged at the center of the plug and having at least an opening for allowing the beverage to either directly or indirectly exit therefrom,
- said supporting means comprise praline holding elements formed as a single piece with the plug or as an insert engageable in the plug,
- said praline, housed in the plug, projects from the praline housing chamber or seat,
- at least the top portion (C) of the plug is so contoured to provide an ergonomics bearing of the lips on the plug as a "teat",

- removable outer covering means for covering said praline for coupling to the plug and/or removable diaphragm closing means housed in the plug under said praline are preferably provided, and
- the beverage is delivered
- about a solid praline for a single primary perimetrical delivery of the beverage,
- or additionally through at least an opening through said praline for a simultaneous secondary delivery of the beverage, or
- only through at least an opening through said praline.

2. A plug according to Claim 1, characterized in that between the contour of the praline housing seat or chamber and the contour of said praline a port, preferably circumferential, continuous or in sectors, is provided, said port communicating the inside of the vessel, or of the plug, with the outside for delivering/sucking the beverage (Figures 1-4; 5-7; 8, 9, 10-13; 23-27; 31-34).

3. A plug according to Claims 1 and 2, characterized in that

- the praline housing means comprise a cup element having a solid bottom or at least an opening therethrough, wherein, as an opening is provided, said praline comprises at least a throughgoing hole for providing a secondary delivery of the beverage,
- the supporting means comprise a windowed disc, forming an insert in single-piece with said cup element, or a single piece with the plug, and
- the opening of the praline housing chamber has a contour forming, with the contour of the praline, a perimetrical port, continuous or in sectors, for providing a primary delivery of the beverage (Figures 1-3).

4. A plug according to Claims 1 and 2, characterized in that said praline housing and supporting means comprise two diametrically opposite arms, provided in the top portion of the plug,

- that the praline is provided with diametrically opposite supporting blind holes, and with an optional throughgoing hole for providing a secondary delivery of the beverage,
- that the opening of the praline housing chamber has a contour forming, with the contour of the praline, a substantially continuous perimetrical port for providing a primary delivery of the beverage, and
- that, preferably, on the supporting arms praline locating circumferential sectors are formed (Figures 5-7).

5. A plug according to Claims 1 and 2, characterized in that the praline housing and supporting means comprise a rod-like element, thereon said praline is either rotatably or non rotatably fitted,

- that the ends of said rod-like element are contoured and adapted to be housed in correspondingly contoured seats diametrically oppositely formed in the plug, and
- that the opening of the chamber has a contour forming, with the praline contour, a perimetrical continuous port for providing a primary delivery of the beverage (Figures 8-9).

6. A plug according to Claim 1, characterized in that:

- the praline has a substantially flat bottom side and a beverage delivery throughgoing hole,

- the praline housing means comprise a recessed chamber with a substantially flat bottom and a beverage delivery opening in an overlapping relationship with the praline throughgoing hole, and
- the supporting means comprise a plurality of pegs projecting from the housing chamber (Figures 10, 12).

7. A plug according to Claim 6, characterized in that in the praline housing chamber, the beverage delivering opening is defined by a hollow, e.g. cylindrical, lug, thereon is fitted the praline having a corresponding cross-section throughgoing hole (Figures 11, 13).

8. A plug according to Claim 1, characterized in that the praline is provided with a throughgoing hole and is fitted on a hollow rod or cane forming the praline supporting means,

- that the praline housing chamber has a substantially semispheric configuration, and
- that the opening of the chamber has a diameter adapted to house, by a geometrical and preferably slidable type of engagement, the praline supporting rod, said praline supporting rod having a length substantially extending up to the proximity of the bottom of the bottle or the like, or having a short length slightly greater than the height of the plug (Figures 17, 18, 21, 22; 19, 20).

9. A plug according to Claims 1, 2 and 8, characterized in that:

- the praline is fitted on a stick or stem (28),
- a hollow tube element, having an inner cross-section adapted to engage the praline supporting stick projects from a windowed diaphragm of the plug bottom,

- in said tube element a weakening point for allowing an easy manual breaking of said tube for removing said tube and accessing said stick is provided, or said tube is removably supported in the plug body, for example by a screw engagement,
- the opening of the chamber has a contour forming, with the contour of the praline, a substantially continuous perimetrical port for providing a primary delivery of the beverage (Figures 23-30).

10. A plug according to Claims 1 and 2, characterized in that:

- the praline supporting means comprise a peg element, arranged in the praline housing chamber and preferably provided with notch-rib or the like means for firmly engaging with a praline fitted on said peg element;
- said peg element comprises supporting means consisting of radial arms in a single piece between the body of the plug and said peg element in a diaphragm with apertures, and
- the opening of the chamber housing the praline is provided with a contour forming, with the contour of the praline, a continuous perimetrical port for delivering the beverage (Figures 31-34).

11. A plug according to Claims 1 and 7, characterized in that the bottom of the recess forming the praline housing chamber is preferably slanted with respect to the plug top face,

- that the praline supporting hollow tubular lug is slanted, preferably orthogonally, with respect to the bottom of the praline housing chamber, said praline having preferably a spherical configuration and including a throughgoing opening for fitting on said tubular lug (Figures 35-37).

12. A plug according to Claims 1 and 11, characterized in that

- the praline housing means comprise a substantially flat disc element, preferably having a recessed seat for housing the praline bottom,
- the praline supporting tube element is substantially vertically, or orthogonally arranged to said praline bearing disc element arrangement, said praline having, for example, a bell configuration (Figures 38, 39).

13. A plug according to Claims 1 and 6, characterized in that said praline supporting means comprise radially extending strip projections having either a like or different length, and
- that the praline bearing substantially flat bottom is preferably provided by a praline holding perimetrical edging (Figures 40-44).

14. A plug according to one or more of the preceding claims, characterized in that said plug is provided with a hygienic inner diaphragm, said inner diaphragm comprising, for example, an aluminium, synthetic, either simple or double material foil, coupled to the plug, for example by a thermosealing coupling, or said diaphragm providing an insert including preferably a gripping tab (Figures 48-50)

15. A plug according to Claims 1, 2 and 9, characterized in that said praline supporting stick housing tubular element as a hollow rod provided, at one end thereof, with fixing means, for example a thread, and adapted to be coupled to fixing counter-means, such as a threaded hole, formed in a slitted diaphragm bottom of the plug (Figure 29A).

16. A plug according to Claims 10, 11 and 12, characterized in that the praline supporting peg or tube element has a puppet configuration, said peg or tube element being adapted to be removably coupled to supporting

means provided in the plug, for example by a thread or the like connection (Figure 34A).

17. A plug according to Claims 6 and/or 7, characterized in that in the contoured top portion of the plug, outside of the praline housing chamber or seat, for example with a flat base, a second ring-like praline, for example of a jelly type is arranged (Figure 10A), and in that a second middle praline can also be provided.

18. A plug according to one or more of the preceding claims, characterized in that said plug is made with a "push-pull" or telescopic pattern.

19. A plug according to Claim 18, characterized in that said plug comprises a top half-plug portion and a bottom half-plug portion, said half-plug portions being telescopically coupled to one another by engaging opposite sleeves provided with inner edged portions to define a maximum opening displacement of the plug, and that in the facing sides of the top half-plug and bottom half-plug are respectively provided diaphragm walls,  
- that the diaphragm wall of the bottom half-plug comprises a tube lug whereas in the diaphragm wall of the top half-plug a flat region coaxially covering said tube element of the bottom half-plug is arranged, and  
- that, at the closing position of the half-plugs, the solid portion of the top diaphragm closes the delivery port of the tube lug of the bottom half-plug (Figure 59).

20. A plug according to Claims 18 and 19, characterized in that through the diaphragm closing wall of the top half-plug a circular delivery opening is provided, whereas in the diaphragm wall of the top half-plug a

cylindrical or frustum lug adapted to close said bottom half-plug delivery opening as the top half-plug is lowered to a closing position thereof is provided (Figure 62).

21. A plug according to one or more of the preceding claims, characterized in that said plug is directly formed on the beverage vessel, or being fixedly coupled to said vessel.

22. A plug according to one or more of the preceding claims, characterized in that the praline is supported to project from the top of the plug, i.e. at a position which can be directly and easily accessed by the tongue upon applying the lips on the plug.

23. A plug according to one or more of the preceding claims, characterized in that the beverage delivery circumferential slot provided between the praline and the seat or chamber housing the latter has preferably a size from 1.5 to 5 mm.

24. A plug according to one or more of the preceding claims, either with or without a praline, characterized in that said plug is packaged to be loosely sold, i.e. independently from the beverage vessel.

25. A praline to be used in a plug according to one or more of the preceding claims, characterized in that

- said praline comprise a solid praline or a praline having at least a beverage delivering throughgoing hole,
- said praline has any desired configurations,
- said praline being individually packaged or packaged in sets, separately from the plug.

26. A praline a according to Claim 25, characterized in that said praline comprise substances which are not included or dissolved in liquids, for example integrating compounds or iron, zinc and the like based substances.

27 A plug according to one or more of the preceding claims, characterized in that said plug has a praline housing seat or chamber contour substantially reproducing the praline contour.

28. A plug according to one or more of the preceding claims, characterized in that said plug is made of a preferably clear food product synthetic material.